

VII. CLAIMING

What is claimed is:

1. The procedure for cloning human SMN gene based on the reverse transcription (RT) and the polymerase chain reaction (PCR) using the synthesized oligonucleotides (SEQ ID NO. 1) for RT, and (SEQ ID NO. 2) and (SEQ ID NO. 3) respectively for PCR,
5 comprising:
 - Isolating SMN-mRNA;
 - Performing RT reaction using the synthesized oligonucleotide
5' TGGCAGACTTAC 3' (SEQ ID NO. 1) under the following conditions: 90°C
10 for 2 minutes; 0°C for 1 minute; 25°C for 10 minutes; 42°C for 45 minutes;
 - Performing PCR reaction using the synthesized oligonucleotides
5' ATGGCGATGAGCAGCGG 3' (SEQ ID NO. 2) and
5' TTAATTAAAGGAATGTGAGCAC 3' (SEQ ID NO. 3) under the following
conditions: Denaturating at 94°C for 1 minute; annealing at 55°C for 2 minutes;
15 elongating at 72°C for 1 minute each cycle, for 35 cycles.
 - Ligation of the PCR product of SMN gene into the PCR® II plasmid vector of the TOPO TA Cloning® kit and introducing the ligation product in INVα F' E. Coli competent cells of the One Shot™ kit;
 - Screening for inserts based on the presence of white colonies that results in the
20 selection of the vector (1) (PCR® II / SMN-cDNA).

2. The procedure for the construction of expression plasmids using the pFastBacTM HTb baculovirus transfer vector of the Bac-to-Bac[®] baculovirus expression system and the pBlueBacHis2 A baculovirus transfer vector of the Bac-N-BacTM baculovirus expression system for the purpose of obtaining SMN recombinant protein in insect cells, comprising:
5. 2.1. Using the pFastBacTM HTb baculovirus transfer vector of the Bac-to-Bac[®] baculovirus expression system:
- Digesting the pFastBacTM HTb baculovirus transfer vector with BamHI and XhoI followed by dephosphorylation with calf intestinal alkaline phosphatase;
 - Digesting the vector (1) pCR^R II/SMN-cDNA with BamHI and XhoI and isolating the resulting fragment containing the cDNA coding sequences of SMN protein, SMN- cDNA;
 - Ligating the SMN-cDNA fragment to the pFastBacTM HTb vector and introducing the ligation product in INVα F' E. Coli competent cells of the One ShotTM kit;
- 10 15 - Screening for inserts based on the presence of white colonies, as a result of which the vector (2) pFastBacTM HTb/SMN-cDNA is selected;
- Introducing the vector (2) in DH10BacTM E. Coli competent cells of the Bac-to-Bac[®] baculovirus expression system kit;
 - Screening for recombinant bacmids in DH10BacTM E. Coli based on the presence of white colonies, then verifying the presence of SMN-cDNA's insert in the recombinant bacmids by PCR amplification using the M13 forward (-40) and M13 reverse primers, as a result of which the recombinant bacmid (3) is selected;
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2.2. Using the pBlueBacHis2 A baculovirus transfer vector of the Bac-N-BacTM
baculovirus expression system:

- Digesting the pBlueBacHis2 A baculovirus transfer vector with BamHI and XhoI followed by dephosphorylation with calf intestinal alkaline phosphatase;
- Digesting the vector (2) pFastBacTM HTb/SMN-cDNA with BamHI and XhoI and isolating the resulting fragment containing the cDNA coding sequences of SMN protein, SMN-cDNA;
- Ligating the SMN-cDNA fragment to the pBlueBacHis2 A vector and introducing the ligation product in INVα F' E. Coli competent cells of the One ShotTM kit;
- Screening for inserts based on the presence of white colonies, as a result of which the vector (4) pBlueBacHis2 A/SMN-cDNA is selected.

3. The procedure for the construction of expression plasmids using the pET-28a (+) bacterial transfer vector of the prokaryotic expression system for the purpose of obtaining SMN recombinant protein in bacteria, comprising:

- Digesting the pET-28a (+) bacterial transfer vector with BamHI and XhoI followed by dephosphorylation with calf intestinal alkaline phosphatase;
- Digesting the vector (2) pFastBacTM HTb/SMN-cDNA with BamHI and XhoI and isolating the resulting fragment containing the cDNA coding sequences of SMN protein, SMN-cDNA;

- Ligating the SMN-cDNA fragment to the pET-28a (+) bacterial transfer vector and introducing the ligation product in INVα F' E. Coli competent cells of the One Shot™ kit;
- Screening for inserts based on the presence of white colonies, as a result of which the vector (5) pET-28a (+)/SMN-cDNA is selected.

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